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Pre-screening Discussions and Prostate-Specific Antigen Testing for Prostate Cancer Screening

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Abstract

Introduction—For many men, the net benefit of prostate cancer screening with prostate-specific antigen (PSA) tests may be small. Many major medical organizations have issued recommendations for prostate cancer screening, stressing the need for shared decision making before ordering a test. The purpose of this study is to better understand associations between discussions about benefits and harms of PSA testing and uptake of the test among men aged ≥40 years.

Methods—Associations between pre-screening discussions and PSA testing were examined using self-reported data from the 2012 Behavioral Risk Factor Surveillance System. Unadjusted prevalence of PSA testing was estimated and AORs were calculated using logistic regression in 2014.

Results—The multivariate analysis showed that men who had ever discussed advantages of PSA testing only or discussed both advantages and disadvantages were more likely, respectively, to report having had a test within the past year than men who had no discussions ($p<0.001$). In addition, men who had only discussed the disadvantages of PSA testing with their healthcare providers were more likely (AOR=2.75, 95% CI=2.00, 3.79) to report getting tested than men who had no discussions.

Conclusions—Discussions of the benefits or harms of PSA testing are positively associated with increased uptake of the test. Given the conflicting recommendations for prostate cancer screening and increasing importance of shared decision making, this study points to the need for understanding how pre-screening discussions are being conducted in clinical practice and the role played by patients' values and preferences in decisions about PSA testing.

Introduction

For many men, the benefits of prostate cancer screening with prostate-specific antigen (PSA) tests may be small compared with the potential for harms related to overdiagnosis and overtreatment.[1,2] In 2012, the U.S. Preventive Services Task Force (USPSTF) expanded its

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2008 recommendation against PSA-based screening for prostate cancer among men aged ≥75 years to also include men of all ages.[2,3] In 2013, the American Urological Association and the American College of Physicians updated their recommendations, narrowing the screening age to 55–69 years and 50–69 years, respectively, and strongly emphasized the requirement of shared decision making (SDM) before ordering the test.[4,5]

Owing to the uncertainty of PSA testing in mortality reduction and the potential harms, most prostate cancer screening guidelines recommend that, before testing, clinicians should have a balanced discussion with patients about the advantages and disadvantages of the test and its scientific uncertainties of effectiveness in reducing mortality.[4–6] The process in which both the patient and clinician share information with each other and take steps to make a decision is commonly referred to as SDM.[4–6]

In 2012, the USPSTF revised the grade assigned to PSA-based testing from the previous "I" (insufficient evidence) to a "D" grade, indicating that physicians are under no obligation to initiate discussions with patients about PSA testing services.[2,7] However, the USPSTF understands that screening decisions may differ based on specific patient characteristics and clinical situations, and that patients who clearly express an interest in PSA testing should make informed decisions about whether testing is right for them.[2]

The role of key SDM elements in influencing PSA testing has not been well studied.[8] In this study, associations between patient reports of discussions about benefits and harms of PSA testing and uptake of the PSA test are examined.

Methods

This study used data from the 2012 Behavioral Risk Factor Surveillance System (BRFSS), a state-based telephone survey of health risk behaviors, preventive health practices, and healthcare access among the non-institutionalized U.S. civilian population aged ≥18 years in the 50 states and the District of Colombia (www.cdc.gov/BRFSS/). The median response rate of the 2012 BRFSS was 49.7%.[9]

The primary outcome of this analysis was defined as receipt of a PSA test, which was a part of a routine exam within the 12 months preceding the survey, among men aged ≥40 years who had no history of prostate cancer (Appendix 1, questions A–B). Associations between receipt of a PSA test within the past year and discussions of benefits and harms of PSA testing were evaluated based on questions about whether men ever had discussions with their physicians about the advantages and disadvantages of PSA testing (Appendix 1, questions C–D). These two questions were combined to form a new four-category variable: ever discussed advantages only, ever discussed disadvantages only, ever discussed both advantages and disadvantages, or no discussion.

The analysis was performed in 2014 using SAS-callable SUDAAN, version 9.2 to account for the multistage and disproportionate stratified sampling design. Weighted prevalence of PSA testing with 95% CIs was estimated and stratified by demographic and health-related characteristics. AORs with 95% CIs for having PSA testing were calculated using logistic regression analysis while controlling for demographic and health-related characteristics.

Results

Both bivariate and multivariate analyses showed that the following factors were associated with increased receipt of PSA testing in the past year: older age, being non-Hispanic white or black, having higher education, being married or living with a partner, being retired, self-reported excellent/very good health, having a comorbidity, having health insurance, and not having medical cost concern (Table 1). After adjusting for the aforementioned variables, men who ever discussed advantages of PSA testing alone or discussed both advantages and disadvantages were more likely, respectively, to report having a test than men who had no discussion (both *p*-values <0.001). In addition, men who had only discussed the disadvantages of PSA testing with their healthcare providers were more likely (AOR=2.75, 95% CI=2.00, 3.79) to report getting tested than men with no discussions.

Discussion

Similar to the findings of a 2010 National Health Interview Survey (NHIS) study,[8] this study shows that discussions of advantages of PSA testing alone or discussions of both advantages and disadvantages of PSA testing are associated with a higher prevalence of receipt of PSA testing. Generally, physician recommendation has been shown to be strongly associated with the decision to have a PSA test.[10,11] Potential explanations for the association between ever discussing both advantages and disadvantages and higher uptake of the test might be that: (1) the physician emphasized benefits more frequently than harms or gave greater weight to benefits; (2) the physician and patient had a balanced SDM discussion, but the patient preferred to undergo PSA testing; or (3) patients had already made up their minds to have a test before the discussion. This study appears to be the first to identify a positive association between discussions of disadvantages only and PSA testing. This finding suggests that patients undertook PSA testing despite physicians' discouragement. Studies have shown that the prevalence of PSA testing among men aged ≥75 years remains high even after release of the 2008 USPSTF prostate cancer recommendations.[8,12] Moreover, Squiers et al.[13] surveyed men's responses to the 2012 USPSTF recommendations against screening and found that although 33% were undecided, 54% of the respondents still intended to get a PSA test in the future. It is likely that men who have a family history of prostate cancer may ask for PSA testing regardless of how SDM is performed. Additional research is warranted to determine the role played by patients' values and preferences in decisions about PSA testing.

The major strength of this study is the use of a large population-based sample, which enabled the authors to provide stable prevalence estimates of PSA testing by pre-screening discussion strata. However, this study is subject to several limitations. First, the BRFSS data were self-reported and thus subject to error. Second, lower response rates increase the potential for selection bias; however, these findings are consistent with a prior study using NHIS data, which has a higher response rate (60.8%).[8] Third, responses to pre-screening discussion questions were structured as yes/no, and specific content of the discussions and whether these discussions were balanced are not known. Fourth, effects of scientific uncertainties of PSA-based screening and patients' knowledge, values, and preferences on PSA testing could not be assessed because this information was not collected in the survey.

Fifth, PSA testing may be under-reported in the survey because the test may have been conducted without the physician telling the patient.[14] Last, respondents might comprehend survey questions about physician's discussion differently[15]; thus, measurement errors could not be ruled out.

Conclusions

Men who have ever discussed the benefits or harms of PSA testing with their healthcare providers are more likely to report having received a PSA test in the past year. Given the conflicting recommendations of prostate cancer screening and increasing importance of SDM, additional research is needed on how pre-screening discussions are being conducted in clinical practice and the role played by patients' values and preferences in decisions about PSA testing.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Appendix: Supplementary data

Supplementary data associated with this article can be found at http://dx.doi.org/10.1016/j.amepre.2015.02.007.

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Table 1

Crude Prevalence Estimates and AORs for PSA Testing Within the Past 12 Months by Demographic and Health-Related Characteristics – BRFSS, U.S., 2012

		Unadjusted Percentage			
	n	**%[a]**	**95% CI**	***p*-value[b]**	**AOR[c] (95% CI)**
Overall	98,446	32.4	31.8–33.0		
Age (Years)				**<0.001**	
40–49	22,211	11.8	11.0–12.6		1.00 (ref)
50–74	63,834	41.1	40.4–41.9		**2.63 (2.40–2.87)*** **
75+	12,401	50.1	48.3–51.8		**2.54 (2.22–2.90)*** **
Race/ethnicity				**<0.001**	
Non–Hispanic white	81,722	35.1	34.5–35.7		1.00 (ref)
Non–Hispanic black	6,542	32.3	30.2–34.4		**1.13 (1.00–1.27)***
Hispanic	4,685	21.0	19.0–23.2		1.00 (0.85–1.17)
Other	5,497	23.1	20.6–25.8		**0.69 (0.58–0.83)*** **
Education				**<0.001**	
Less than high school	7,602	19.9	18.3–21.6		1.00 (ref)
High school graduate	28,134	30.3	29.3–31.3		**1.23 (1.07–1.41)****
Some college	24,028	33.9	32.7–35.0		**1.22 (1.06–1.40)****
≥College graduate	38,682	39.0	38.1–39.9		**1.34 (1.17–1.53)*** **
Marital status				**<0.001**	
Married or living together	65,094	35.7	35.0–36.4		1.00 (ref)
Divorced, separated, and widowed	23,502	28.5	27.4–29.7		**0.83 (0.77–0.90)*** **
Never married	9,850	19.3	17.7–20.9		**0.78 (0.69–0.88)*** **
Employment				**<0.001**	
Employed	54,622	27.0	26.3–27.7		1.00 (ref)
Unemployed	5,130	18.2	16.3–20.3		0.92 (0.78–1.08)
Retired	31,441	53.2	52.1–54.3		**1.56 (1.44–1.68)*** **
Other	7,253	23.3	21.4–25.4		0.95 (0.82–1.11)

		Unadjusted Percentage			
	n	**%[a]**	**95% CI**	***p*-value[b]**	**AOR[c] (95% CI)**
Self–reported health				**<0.001**	
Excellent/very good	49,107	34.5	33.7–35.3		1.00 (ref)
Good	30,834	31.8	30.8–32.8		0.93 (0.87–1.00)
Fair/poor	18,505	28.3	27.1–29.6		**0.83 (0.75–0.92)****
Comorbidities[d]				**<0.001**	
None	49,053	28.2	27.5–28.9		1.00 (ref)
1 disease	24,585	36.3	35.2–37.5		**1.21 (1.12–1.31)*****
2 diseases	13,017	37.8	36.2–39.4		**1.25 (1.14–1.38)*****
3+ diseases	11,791	38.2	36.5–40.0		**1.24 (1.10–1.40)*****
Health insurance				**<0.001**	
Yes	88,265	36.3	35.6–36.9		**2.21 (1.91–2.56)*****
No	10,181	10.1	9.0–11.2		1.00 (ref)
Medical cost concern				**<0.001**	
Yes	8,918	15.1	13.7–16.5		**0.71 (0.62–0.82)*****
No	89,528	34.8	34.2–35.4		1.00 (ref)
Discussed advantages/disadvantages ever				**<0.001**	
None	37,172	5.7	5.3–6.1		1.00 (ref)
Advantages only	33,897	55.0	53.9–56.0		**13.02 (11.93–14.21)*****
Disadvantages only	783	17.1	13.2–21.9		**2.75 (2.00–3.79)*****
Both	26,594	51.4	50.2–52.6		**12.16 (11.10–13.31)*****

Note: Boldface indicates statistical significance (*p<0.05; **p<0.01; ***p<0.001).

[a]Crude prevalence of PSA testing.

[b]χ^2 test.

[c]Adjusted for all other variables listed in the table.

[d]Included myocardial infarction, coronary heart disease, stroke, non-skin cancer, chronic obstructive pulmonary disease, depression, kidney disease, diabetes, and disability.

BRFSS, Behavioral Risk Factor Surveillance System; PSA, prostate specific antigen